

WHAT IS CLAIMED IS:

1. A multibeam scanning device that dynamically deflects a plurality of light beams emitted by a light source, the dynamically deflected optical beams being scanned on target surfaces, respectively, comprising:

a deflecting system that deflects the plurality of beams emitted by the light source in a main scanning direction, the plurality of beams being aligned in the main scanning direction;

a first imaging optical system upon which all the optical beams dynamically deflected by the deflecting system are incident;

a plurality of optical path deflection units each of which deflects the optical path of each of the optical beams that passed through the first imaging optical system, each of the plurality of optical path deflection units being rotatable in the auxiliary scanning direction that is orthogonal to the main scanning direction;

a plurality of second imaging optical systems, the plurality of beams deflected by the optical path deflection units being incident on the plurality of second imaging optical systems, respectively, the beams passed through the second imaging optical systems being converged on the plurality of target surfaces, respectively; and

a position adjusting system which adjusts a position of

each of the plurality of second imaging optical systems so that the positional relationship of the second imaging optical system with respect to the beam incident thereon is maintained.

2. The multibeam scanning device according to claim 1, wherein the position adjusting system includes a plurality of moving mechanisms that move the plurality of second imaging optical systems in association with rotation of the plurality of optical path deflection units, respectively.

3. The multibeam scanning device according to claim 2, wherein each of the moving mechanisms moves each of the second imaging optical systems in conjunction with the corresponding optical path deflection unit maintaining a constant distance with respect to the corresponding optical path deflection unit.

4. The multibeam scanning device according to claim 3, wherein the moving mechanisms include link systems which connect the second imaging optical systems with the corresponding optical path deflection units so that the plurality of second imaging optical systems move according to rotation of the optical path deflection units, respectively.

5. The multibeam scanning device according to claim 4, wherein the link system is formed to let the second imaging optical system

rotate around the corresponding optical path deflection unit by twice rotation angle of the corresponding optical path deflection unit.

6. The multibeam scanning device according to claim 5, wherein each of the moving mechanisms is configured such that a deflection point of the optical beam on the optical path deflection unit, a rotation axis of the optical path deflection unit, and a rotation axis of the corresponding second imaging optical system coincide with one another.

7. The multibeam scanning device according to claim 1, further comprising a plurality of aperture units corresponding to the second imaging optical systems, each of the plurality of aperture units regulating and specifying a shape of a beam spot formed on each of the scan target surfaces, the aperture units being placed so as not to move relative to the corresponding second imaging optical system.

8. The multibeam scanning device according to claim 7, wherein each of the second imaging optical systems has a concavity on its beam incident side, and wherein each of the aperture units is fitted in the concavity of the corresponding second imaging optical system.

9. The multibeam scanning device according to claim 1, wherein the first imaging optical system includes an fθ lens.

10. The multibeam scanning device according to claim 1, wherein each of the second imaging optical systems includes an optical system having refracting power to converge the optical beam in the auxiliary scanning direction.

11. The multibeam scanning device according to claim 1, wherein the plurality of second imaging optical systems are configured to compensate for aberration caused by the first imaging system for the plurality of beams when predetermined positional relationships with respect to the plurality of beams are maintained, and

wherein the position adjusting system adjusts a position of each of the plurality of second imaging optical systems so that the predetermined positional relationship of the second imaging optical system with respect to the beam incident thereon is maintained.

12. A multibeam scanning device that dynamically deflects a plurality of light beams emitted by a light source, the dynamically deflected optical beams being scanned on target surfaces, respectively, comprising:

a deflecting system that deflects the plurality of beams

emitted by the light source in a main scanning direction, the plurality of beams being aligned in the main scanning direction;

a first imaging optical system upon which all the optical beams dynamically deflected by the deflecting system are incident;

a plurality of optical path deflection units each of which deflects the optical path of each of the optical beams that passed through the first imaging optical system in the auxiliary scanning direction that is orthogonal to the main scanning direction, a direction in which each of the plurality of beams is deflected being changeable;

a plurality of second imaging optical systems, the plurality of beams deflected by the optical path deflection units being incident on the plurality of second imaging optical systems, respectively, the beams passed through the second imaging optical systems being converged on the plurality of target surfaces, respectively; and

a position adjusting system which adjusts a position of each of the plurality of second imaging optical systems so that the positional relationship of the second imaging optical system with respect to the beam incident thereon is maintained.

13. A multibeam scanning device that dynamically deflects a plurality of light beams emitted by a light source, the dynamically deflected optical beams being scanned on target

surfaces, respectively, comprising:

first deflection means for deflecting the plurality of beams emitted by the light source in a main scanning direction, the plurality of beams being aligned in the main scanning direction;

a first imaging optical system upon which all the optical beams dynamically deflected by the first deflection means are incident;

a plurality of second deflection means for deflecting the optical paths of the optical beams that passed through the first imaging optical system individually in the auxiliary scanning direction that is orthogonal to the main scanning direction, directions in which the plurality of beams are deflected being changeable;

a plurality of second imaging optical systems, the plurality of beams deflected by the second deflection means being incident on the plurality of second imaging optical systems, respectively, the beams passed through the second imaging optical systems being converged on the plurality of target surfaces, respectively; and

adjusting means for adjusting positions of each of the plurality of second imaging optical systems so that the positional relationships of the plurality of second imaging optical systems with respect to the beams incident thereon are maintained, respectively.